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ing of a tribute to Herbert R. Spencer was the occasion of discussion regarding the Spencer Tolles Fund which had grown to nearly eight hundred dollars. It was the general opinion that a united effort should be made to bring this fund at once to a point where its income would be available for the encouragement of research, and a committee was appointed to carry out the plan.

The Report of the Limnological Commission and papers on various subjects of fresh water biology occupied the afternoon session of Friday, and this program aroused active interest and discussion of the plan offered.

On Saturday morning the reading of papers was concluded, and the final business session closed the meeting. The following officers were elected :

President, Professor C. H. Eigenmann, Bloomington, Ind. ; First Vice-President, Chas. M. Vorce, Esq., Cleveland, Ohio ; Second Vice-President, Edward Pennock, Philadelphia, Pa.

Election Members of the Executive Committee. Dr. C. A. Kofoid, Urbana, Ill. ; John Aspinwall, New York, N. Y. ; Dr. A. G. Field, Des Moines, Iowa.

After the installation of the President and the customary resolutions of thanks, the Society adjourned.

The following papers were presented at the meeting in the order given :

'Photographing the Spectra of Colored Fluids,' by Dr. Moses C. White, New Haven, Conn.

'A Method for the Measurement and Demonstration of Size of Minute Bodies,' by Professor Henry B. Ward, Lincoln, Nebr.

'Herbert Spencer's Work,' by Henry R. Howland, Buffalo, N. Y.

'Methods in Embryology,' by Professor S. H. Gage, Ithaca, N. Y.

'A Comparison of the Development of the Larynx in Frogs and Toads,' by Professor S. H. Gage, Ithaca, N. Y.

'On the Distribution of Growths in Surface Water Supplies and the Method of Collecting Samples for Examination,' by Dr. F. S. Hollis, Boston, Mass.

'The Necessity of maintaining a System of Field Work on Surface Water Supplies,' by H. N. Parker, Boston, Mass.

'The Cladocera of Nebraska,' by Dr. Chas. Fordyce, University Place, Nebr.

'Biological Work at the Mount Prospect Laboratory,' by G. C. Whipple, Brooklyn, N. Y.

'Some New Forms in the Cave Fauna,' by Professor C. H. Eigenmann, Bloomington, Ind.

'The Modern Conception of the Structure and Classification of the Desmidiaceae,' by Professor Chas. E. Bessey, Lincoln, Nebr.

'Some North American Hydrachnidae hitherto Undescribed,' by Dr. R. H. Wolcott, Lincoln, Nebr.

'Limnological Studies at Flathead Lake,' by Professor M. J. Elrod, Missoula, Mont.

'Methods of Producing Color and Tone Effects in Lantern Slides' (illustrated by a series of lantern slides), by John Aspinwall, New York, N. Y.

'Some Notes on Bibliographic Methods in Microscopical Work,' by Dr. R. H. Ward, Troy, N. Y.

'A New Ear Fungus of Man,' by Dr. Roscoe Pound, Lincoln, Nebr.

'Methods in Killing and Staining Protozoa,' by Professor M. J. Elrod, Missoula, Mont.

'Synthetic Alcohol as a Fixing Agent for Tissues,' by Dr. T. E. Oertel, Savannah, Ga.

HENRY B. WARD,
Secretary.

SCIENTIFIC BOOKS.

The Birds of Celebes and Neighbouring Islands.

By A. B. MEYER and L. W. WIGLESWORTH. Two Volumes. 4to. Berlin, R. Friedländer & Sohn. 1898. Vol. I., pp. i-xxxii, **1-130**, 1-392, pll. 17 (14 colored), and 7 colored maps ; Vol. II., pp. 393-962, pll. 28, colored.

Meyer and Wiglesworth's 'Birds of Celebes' marks an era in the history of East India ornithology. It consists of two volumes in quarto, with over eleven hundred pages of text and fifty-two plates and maps, nearly all colored. Although published in Berlin, by the well-known German publishers R. Friedländer & Sohn, it is in excellent idiomatic English, and should thus be especially welcome to English readers. In scope and character it is all that could be desired, being in short just the kind of work we should anticipate from such a source, the senior author especially having many years since attained an enviable prominence among the leading ornithologists of the world.

The field embraced in the present work is the East Indian Archipelago, or 'the island-world from Sumatra to the Solomon Islands and from the Philippines to the Lesser Sundas,' as shown in maps 1 and 2 accompanying the work. This area extends from Lat. 2° N. to 6° S., and from Long. 118° to about 127° E. It thus includes not only Celebes, but 'the Talaut Islands in the north, the Sulu Islands in the east, and the Djampa Group in the south.' It thus extends to the Philippines on the north, to Borneo on the west, and to Papuasia on the east. The Introduction (pp. 1-130) includes a summary of 'Travel and Literature,' from the visit of Labillardière in 1793 to the expedition of Waterstradt to the Talaut Islands in 1897, with a special list of the literature on Celebes. Next are discussed the 'Seasons and Winds in the East Indian Archipelago' (with maps 3 and 4), in relation to their effect upon the dispersal, distribution, and climatic variation of the birds. This chapter gives a vast amount of information regarding the seasons and general climatic conditions of the various groups of islands from Borneo to New Guinea.

Under the heading 'Migration in the East Indian Archipelago' the general subject of migration is most intelligently considered, as well as the local movements and migration proper of the birds in the various islands. Although there is here a true migration of marked proportions, little as yet appears to be known as to its details, owing to the lack of competent resident observers.

'Variation' is considered under the following five heads: 1. Individual Variation; 2. Geographical Variation; 3. Seasonal Changes; 4. Sexual Differences; 5. Changes depending upon Age. Under 'Geographical Variation' these authors so well express the general consensus of ornithologists respecting the origin of new forms through geographic influences that the following statements seem of sufficient interest to warrant transcription: "Although it is conceivable, and indeed likely, that a new species may sometimes owe its origin to dimorphism * * * it is nevertheless far more certain that the great majority of the peculiar forms of Celebes and the neighboring islands

are what are termed geographical species or local races, which have developed their distinctive characters while geographically isolated from one another. In the Celebesian area there are about 150 species of this description now known, not to speak of a large number of partially formed races. The latter are in many respects the most interesting, as they show species in the first stages of their differentiation, and their study holds out the best hope of solving the problem of the origin of species—or at least of the majority of species. The differences seen are often very small, but of a very palpable description * * *. These differences may be due to an inherent tendency in the individuals in question to evolve in a certain direction * * *, or they may be caused by local influences. For some cases the former assumption appears unavoidable; for other cases there is satisfactory evidence of the effect of local influences, though the exact nature of this latter is almost always uncertain; as a rule, probably, both causes operate together, but it very rarely happens that an opinion either way is permissible at present." Following this many instances of 'correlated geographical variation' in size and coloration are cited as characterizing representative forms in different groups of islands.

The subject of 'Sexual Differences,' so prolific of hypotheses, is treated at length, and with admirable conservatism. Eight of the leading 'theories of the origin of secondary sexual characters' are stated and made the subject of comment; six of them are presumed to have been 'actually operative in nature, working alone or more likely in different combinations and degrees.' Reasons are also advanced in support of 'the opinion that mutilations of feathers—and hence of other parts—if repeated for generations—are inherited.'

Under the caption 'Changes dependent upon Age' are discussed such interesting topics as 'ancestral characters,' 'hereditary effects of shelter and exposure,' etc., including the origin of 'racket-feathers' in groups of birds of very diverse affinities.

Some fifty pages are devoted to 'Geographical Distribution,' in which 'Wallace's Line' is considered at length. He leaves the prob-

lem undecided, and considers it, in the absence of geological evidence, a 'waste of time to speculate on it with the help of an up-and-down system for the islands and continents, just as required.' The local distribution of the Celebesian birds is presented in great detail by means of a series of tables, etc. Among the novelties of the work is an attempt to estimate the 'value of the affinities of the peculiar species of Celebes'; in other words, it is recognized that the various genera and species are not units of equal value in computing the relationship of the Celebesian avifauna to that of other neighboring countries. The conclusion reached is that the avifauna of Celebes "has far stronger connections with the Philippines than with any of the other neighboring lands, and that the relation of its birds with the Oriental Region is more than twice as strong as with the Australian Region."

The systematic part includes 393 species, and probably about 150 additional subspecies, all treated with the detail, as regards their bibliography, plumage, distribution, life-history, and affinities, that would be expected in a special faunal work of the magnitude and sumptuous character of the present admirable monograph. Dr. Meyer, the senior author, in addition to his high standing as an ornithologist, has the advantage of knowing personally the region to which the present work relates, he having spent three years (1870-73) in Celebes and neighboring islands, collecting much of the material (about 4000 specimens, now in the Dresden Museum) on which the 'Birds of Celebes' is based. He thus had an opportunity of becoming familiar through actual field work with the geographical and climatic characteristics of the East Indian Archipelago. The numerous colored plates of previously unfigured species are well executed and form a fitting accompaniment to a work of high general excellence, and, moreover, a work which closes an important gap in ornithological literature.

J. A. ALLEN.

A Monograph of Christmas Island. London, British Museum (Nat. History). 1900. Pp. xvi + 337. 8vo. 22 plates, map and cuts. Christmas Island is a small body of land com-

prising about 43 square miles, situated in about latitude 10°, 30' south, nearly 200 miles southwest of the western part of Java, from which it is separated by a depression of the sea floor some 3000 fathoms in depth. Though known to navigators since the middle of the seventeenth century, it has remained uninhabited until very recently, having been explored by Captain Pelham Aldrich R. N., in 1887, and annexed to the British crown in 1888.

It seemed highly desirable that this virgin island should be carefully examined and described by a competent naturalist and geologist before being opened up by Europeans for agricultural and commercial purposes. Accordingly it was arranged with the Trustees of the British Museum that Mr. C. W. Andrews, of the Geological Department, should be granted leave to carry out this exploration, the expenses of which were defrayed by Sir John Murray. Mr. Andrews spent ten months of 1897-98 upon the island and carried out the work with great success. The reports upon the geology and physical conditions of the island in this volume are from his pen, while the various subdivisions of the fauna and flora have been treated by a body of experts to whose descriptions Mr. Andrews has added many notes taken on the spot. The result forms perhaps the most elaborate account of an oceanic island ever published. Sir John Murray, who is interested in the company which has obtained a lease of the island for the purpose of developing its agriculture and deposits of phosphate of lime, intends to watch carefully the effects produced by the immigration of civilized man upon the fauna and flora, and record comparisons in the future for which the present volume will serve as a basis.

The island is of a roughly triangular form with projecting headlands and deep water for the most part close up to the cliffs or the narrow fringing reef which encircles most of the shore. It is in fact the flattish summit of a submarine mountain more than 15,000 feet high which rises some 1200 feet above the sea. The submarine slopes are about two in five, a depth of 6600 feet occurs in less than three miles from the shore and the foot of the mountain within twenty miles. The geological structure in brief,